

IRC14-0382

03i. Direct seeded rice and mechanization

PERFORMANCE OF RICE (ORYZA SATIVA L.) GENOTYPES AS INFLUENCED BY NITROGEN LEVELS UNDER TRANSPLANTED AND DIRECT SEEDING METHODS

B. Desai¹, S.R. Rajesh², A. Amaregouda³, B.M. Chittapur², B. Clerget⁴

¹*Agronomy, University of Agricultural Sciences Raichur, Raichur, India*

²*Agronomy, University of Agricultural Sciences Raichur, Raichur, India*

³*Crop Physiology, University of Agricultural Sciences Raichur, Raichur, India*

⁴*EcoPhysiology, IRRI, Los Banos, Philippines*

Purpose:

Nitrogen is an influential factor in rice production and its immense role in increasing rice productivity is well documented. The present experiment was undertaken to identify response of rice genotypes to levels of nitrogen under transplanted and direct seeded rice system.

Approach and methods used:

A field experiment was conducted on a deep black soil during the rainy season of 2013 at UAS farm Raichur, Karnataka, India. Treatments consisting of two establishment methods (transplanting and direct seeding) in main plots and the combinations of 3 varieties ['BPT 5204', 'Gangavathi sona' and 'JKPH 3333'] and 3 nitrogen levels [75%, 100% and 125% RDN per ha. (100% RDN is 150 kg/ha)] in subplots were tested in a split-plot design and replicated thrice. Spacing of 25X10 cm was followed in both the methods, fertilizer N as per the treatments in the form of urea was applied in three splits (50% as basal, remaining 50% was applied in two equal splits at 25 days intervals) for transplanted method and four splits (Four equal splits of 25% at 25 days intervals) for DSR. Total nitrogen content was estimated at 30 days interval during the growth.

Key results:

Among the different methods of planting transplanted method recorded significantly higher grain yield 56.66 q ha⁻¹ and straw yield 90.91 q ha⁻¹ than direct seeding (45.59 q ha⁻¹). Among the genotypes with nitrogen levels, JKPH 3333 with 125% RDN per ha recorded significantly higher grain yield (59.57 q ha⁻¹) than rest of the genotypes and nitrogen levels. Higher net returns were recorded under transplanted than DSR condition but no significant difference in BC ratio was noticed due to high cost of cultivation in the transplanted method. JKPH 3333 with 125% RDN recorded higher BC ratio in direct seeding than transplanted method with rest of the genotypes and nitrogen levels. It was concluded that the performance of JKPH 3333 with 125% RDN was better under DSR method.

Synthesis and Applications:

To make the rice cultivation cost-effective, to ensure the rational use of water and to get rice best fit in different cropping systems on account of early maturity, cultivation of DSR seems to be the best option.